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Application No. <u>091759,781</u>	Prepared by <u>JS</u>	Tracking Number <u>5980539</u>	
Examiner-GAU <u>Langer-1754</u>	Date <u>7/28/04</u>	Week Date <u>7/12/04</u>	
	No. of queries <u>1</u>	<u>re-us IFW</u>	

JACKET

a. Serial No.	f. Foreign Priority	k. Print Claim(s)	<u>p. PTO-1449</u>
b. Applicant(s)	g. Disclaimer	l. Print Fig.	q. PTOL-85b
c. Continuing Data	h. Microfiche Appendix	m. Searched Column	r. Abstract
d. PCT	i. Title	n. PTO-270/328	s. Sheets/Figs
e. Domestic Priority	j. Claims Allowed	o. PTO-892	t. Other

SPECIFICATION

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- d. Other Missing Text
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- f. Duplicate Text
- g. Brief Description
- h. Sequence Listing
- i. Appendix
- j. Amendments
- k. Other

CLAIMS

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MESSAGE

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RESPONSE

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Applicant(s)

Rau et al

091759,781

Filing Date

1/11/2001

Group Art Unit

1764

U.S. PATENT DOCUMENTS

EXAMINER INITIAL	REF	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	A1	3,511,595	5/12/70	Fuchs	23	4	
	A2	3,660,023	5/2/72	Frevel et al	23	150	
	A3	3,883,639	5/13/75	Cronkright et al	423	24	
	A4	3,988,422	10/26/76	Kruger	423	232	
	A5	4,160,810	7/10/79	Benson et al	423	220	
	A6	4,187,279	2/5/80	Rimpi	422	185	
	A7	4,247,525	1/27/81	Voeste	423	242	
	A8	4,272,498	6/9/81	Faatz	423	242	
	A9	4,367,258	1/4/83	Lagana et al	423	221	
	A10	4,376,101	3/8/83	Sartori et al	423	223	
	A11	4,376,102	3/8/83	Thaler Et al	423	223	

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	REF	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	Translation	
							YES	NO
	B1	WO9825688	6/18/98	European patent	B01d53	62		
	B2	GB2284203	5/31/95	United Kingdom	B01D53	62		
	B3	EP 487102	5/27/92	EPO	B01D53	34		
	B4	GB819215	9/2/59	Germany	55	2		
	B5	GB1305718	2/7/72	United Kingdom	B01D53	34		

OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)

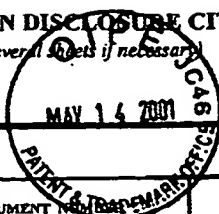
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	A12	4,405,578	9/20/83	Sartori et al	423	223	
	A13	4,496,371	1/29/85	Urban et al	48	197	
	A14	4,510,124	4/9/85	Sears et al	423	437	
	A15	4,708,855	11/24/87	Morrison	423		
	A16	4,716,027	12/29/87	Morrison	423		
	A17	5,006,323	4/9/91	Johnson	423		
	A18	5,059,406	10/22/91	Sheth et al	423		
	A19	5,100,633	3/31/92	Morrison	423	225	
	A20	5,192,518	3/9/93	Ukawa et al	423	244.08	
	A21	5,261,490	11/16/93	Ebinuma	166	266	
	A22	5,429,808	7/4/95	Kuroda et al	422	176	

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							YES	NO
	B6	WO9855210	12/10/98	European patent	B01D53	62		

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	A24	5,639,430	6/17/97	Meyers et al	422	176	
	A25	5,686,053	11/11/97	Kikkawa et al	423	243.01	
	A26	5,788,944	8/4/98	Kikkawa et al	423	243.01	

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C2	"Mitigation of CO2 by Chemical Conversion: Plausible Chemical Reactions and Promising Products", M. Moudou and J.A. Moulijn, published in Energy and Fuels, Vol. 10, No. 2, p 305-325, dated 1996
C3	"The Fixation of Carbon Dioxide in Inorganic and Organic Chemicals", M. Aresta, published in Energy Conversion and Management, Vol. 34, No. 9-11, p. 745-752, dated 1993
C4	"The Carbonate-Silicate Geochemical Cycle and its Effect on Atmospheric Carbon Dioxide Over the Last 100 Million Years", R.A. Berner, A.C. Lasaga, and R.M. Garrels, published in American Journal of Science, Vol. 283, p 641-683, dated September 1983
C5	"Marine Carbonate Formations: Their role in Mediating Long-Term Ocean-Atmosphere Carbon Dioxide Fluxes - A Review", C.N. Murray and T.R.S. Wilson, published in Energy Conversion and Management, Vol. 38, Supple., p. S287-S294, dated 1997
C6	"Multiple timescales for neutralization of fossil fuel CO2", D. Archer, H. Keshgi, and E. Maier-Reimer, published in Geophysical Research Letters, Vol. 24, No. 4, p. 405-408, dated February 15, 1997
C7	"CO2 Fixation by Artificial Weathering of Waste Concrete and Coccolithophorid Algae Cultures", H. Takano and T. Matsunaga, published in Energy Conversion Management, Vol. 36, No. 6-9, p 697-700, dated 1995
C8	"Evaluation Strategies for Chemical and Biological Fixation/Utilization Processes of Carbon Dioxide", T. Kojima, published in Energy Conversion Management, Vol. 36, No. 6-9, p 881-884, dated 1995
C9	"Absorption and Fixation of Carbon Dioxide by Rock Weathering", T. Kojima, A. Nagamine, N. Ueno and S. Uemiya, published in Energy Conversion Management, Vol. 38, Suppl., p S461-S466, dated 1997
C10	"Carbon Disposal in Carbonate Minerals", K.S. Lackner, C.H. Wendt, D.P. Butt, E.L. Joyce, D.H. Sharp, published in Energy, Vol. 20, No. 11, p 1153-1170, dated 1995
C11	"Progress on Binding CO2 in Mineral Substrates", K.S. Lackner, D.P. Butt, and C.H. Wendt, published in Energy Conversion and Management Vol. 38, No. 11, p S259-S264, dated 1997
C12	"CO2 Recovery From Flue Gas by an Ecotechnological (Environmentally Friendly) System", T. Chohji, M. Tabata, and E. Hiral, published in Energy, Vol. 22, No. 2/3, p 151-159, dated 1997

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C13	"Sequestering Atmospheric Carbon Dioxide by Increasing Ocean Alkalinity", H. Kheshgi, published in Energy, Vol. 20, No. 9, p 915-922, dated 1995
C14	H. N. Soud and M. Takeshita, FGD Handbook, Second Edition, IEA Coal Research, London, chapter 3, p. 15-43, dated January 1994
C15	"Geochemistry of Sedimentary Carbonates", Elsevier Science Publishers, p. 1-10, 72-86, dated 1990
C16	"A Continuous and Mechanistic Representation of Calcite Reaction-Controlled Kinetics in Dilute Solutions at 25°C and 1 Atm Total Pressure", T. Arakaki and A. Mucci, published in Aquatic Geochemistry, Vol. 1, p 105-130, dated 1995
C17	"CO2 Capture, Reuse, and Storage Technologies for Mitigating Global Climate Change, Herzog et al, White Paper, p 34, dated January 1997
C18	"A Geological Perspective on Global Warming and the Possibility of CO2 Removal as Calcium Carbonate Mineral", Dunsmore, Energy Conversion Management, Vol 33, No. 5-8, p 565-572, dated 1992
C19	"Carbon Sequestration - State of the Science", Working paper for roadmapping future carbon sequestration R&D, U.S. DOE Office of Science/Office of Fossil Energy, dated February 1999, p 3-13 to 3-16
C20	IEA 2000 "Capture of CO2 Using Water Scrubbing", International Energy Agency, Gloucestershire, UK. pg. 2-4 and 2-5 describes work of Rau and Caldeira
C21	U.S. Dept. of Energy report, 1999. Carbon Sequestration Research and Development. U.S. Dept. of Energy, Wash., D.C, page 3-14
C22	Wong, C.S. and S. Hirai. 1997. Ocean Storage of Carbon Dioxide - A Review of Oceanic Carbonate and CO2 hydrate Chemistry. International Energy Agency, Cheltenham, UK. pg. 54-58
C23	Golomb, G. and A. Angelopoulos, "A Benign Form of CO2 Sequestration in the Ocean", 5th International Conf on Greenhouse Gas Control Technologies
C24	Smith, H.J. 2000. Ocean Dumping of CO2. Science 287: 769

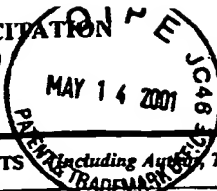
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D1

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D2

an abstract entitled "Geochemical implications of the carbonate-dissolution method for ocean disposal of carbon dioxide" describing this invention was presented by one of the inventors at the "Second International Symposium on CO2 in the Ocean" conference January 18-22, 1999 in Tsukuba, Japan

D3

Rau and Caldeira, Lawrence Livermore National Laboratory (LLNL) report UCRL-JC-132228. Entitled "Enhanced Carbonate Dissolution: A Means of Sequestering Waste CO2 as Ocean Bicarbonate", it was catalogued by the LLNL library on March 15, 1999, also published in Energy Conversion and Management, vol. 40, 1999, pp. 1803-1813.

D4

Nojiri, Y. 1999. Proceedings of the 2nd International Symposium: CO2 in the Oceans. National Institute for Environmental Studies, Tsukuba, Japan. pg. 429

D5

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D6

Rau, G.H. and K. Caldeira. Enhanced carbonate dissolution as a means of sequestering carbon dioxide in the ocean. Transaction, American Geophysical Union 80(49): 213, December 7, 1999

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